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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,364	10/19/2004	Marco Ebert	04163	2091

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EXAMINER	
MILLER, DANIEL H	

ART UNIT	PAPER NUMBER
1775	

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/507,364	EBERT ET AL.	
	Examiner	Art Unit	
	Daniel Miller	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-18 is/are pending in the application.

4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12/17/04 &10/19/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims1-8 in the reply filed on is acknowledged.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froberg et al (U.S. 4,815,572) in view of Moody (U.S. 6,555,211).

3. Froberg teaches an improved brake system comprising a molded carbon article with a silicon carbide surface (abstract). A pyrolitic carbon is formed from the methane around Pan or pitch based carbon fibers (column 3 line 55-65; column 4 line 7-13). A silicon powder is melted and allowed to diffuse into the porous carbon composite (column 4 line 29-47). The depth of conversion of the surface to silicon carbide is controllable based on the porosity of the carbon core surface and necessarily grain size of the powder, which is adjusted through densification processes (column 4 line 48-55). Froberg is silent as to the change in density of the fibers across the thickness of the article.

4. Moody teaches a carbon composite comprising carbon fibers with a phenolic or other organic resin infiltration, where in the resin is carbonized (column 1 line 50-65). Therefore, it would be obvious to use thermoplastics that have a carbon yield since a wide variety of materials are contemplated in the art. Moody further teaches it is known in the art of carbon composites to vary the density of fibers across the thickness of the composite in order to increase the strength in that direction (column 4 line 52-60).

5. It would have been obvious to one of ordinary skill in the art to modify Froberg with the concentration of Moody in order to increase the density as you get to the core of the material, which is advantageous for brake pads which require a silicon carbide surface and a dense carbon fiber composite core (Froberg; column 4 line 5-15).

6. Regarding claim 3 and 6, the carbon body has impurities and additives as well as variable grain size that necessarily effect porosity.

7. Regarding claims 7-8, the composite of Froberg would necessarily have concentrations of carbon between 20-100% or it would be obvious to optimize this concentration because the brake pad is mainly carbon with only a silicon carbide surface coating (figure3).

8. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hecht et al (U.S. 5,705,008) in view of Moody (U.S. 6,555,211).

9. Hecht teaches a brake, comprising a porous carbon composite, which further comprises carbon fibers and a thermosetting resin, ceramic, metal, or carbon that is both carbonized and graphitized to create the composite (abstract) and a SiC outer

coating can be created by infiltration with silicon carbide (column 19 line 1-10). The silicon carbide outer coating would necessary varies depending upon the pour size and ratio of the carbon composite. Hecht is silent as to the change in density of the fibers across the thickness of the article.

10. Moody teaches a carbon composite comprising carbon fibers with a phenolic or other organic resin infiltration, where in the resin is carbonized (column 1 line 50-65). Therefore, it would be obvious to use thermoplastics that have a carbon yield since a wide variety of materials are contemplated in the art. Moody further teaches it is known in the art of carbon composites to vary the density of fibers across the thickness of the composite in order to increase the strength in that direction (column 4 line 52-60).

11. It would have been obvious to one of ordinary skill in the art to modify Hecht with the composite of Moody in order to increase strength as you get to the core of the material, which is advantageous for brake pads (Hecht; column 10 line 57-68).

12. Regarding claim 3 and 6, the carbon body has impurities and additives as well as variable grain size that necessarily effect porosity.

13. Regarding claims 7-8, the composite of Hecht would necessarily have concentrations of carbon between 20-100% or it would be obvious to optimize this concentration because the brake pad is mainly carbon resin impregnating carbon fibers (see examples) with only a silicon carbide surface coating (example 9).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Miller whose telephone number is (571) 272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Miller

JOHN J. ZIMMERMAN
PRIMARY EXAMINER